SCHOLARS
STRATEGY NETWORK

The Unintended Consequences of Electrifying Police Fleets

Zia Muhammad, North Dakota State University

As the Biden-Harris administration sets its sights on a greener future, the ambitious goal of making 50% of all new vehicle sales electric by 2030 is a significant milestone. This transition to electric vehicles (EVs) can reduce carbon emissions, lower fuel costs, and combat climate change. However, as with any major shift, there are unintended consequences that must be addressed to ensure a smooth and equitable transition.

Transition to Electric Vehicles (EVs)

South Pasadena, California, became the first law enforcement agency in the United States to replace its entire fleet of gasoline-powered vehicles with EVs when it introduced a fleet of 20 Teslas. The city's transition to EVs was part of its commitment to environmental stewardship and sustainability, and today more police departments are moving to EVs as companies work on creating models tailored to law enforcement. For example, the 2025 Chevrolet Blazer Police Pursuit EV is specifically built for police use, with features like OnStar safety technology and a specialized drive system designed for active duty.

This transition of law enforcement fleets to EVs is a bold and groundbreaking move. It is seen as a progressive step towards reducing emissions, fighting climate change, saving money, and improving public health. However, the practicality of using EVs for patrols depends on factors like charging time, driving range, and the need for shared vehicles, which may not be suitable for all departments. While electric and hybrid vehicles offer potential cost savings and environmental benefits, police departments need to carefully consider factors like costs of vehicle modifications, charging infrastructure, and pursuit capabilities before fully transitioning to electric vehicles.

Limited Range and Prolonged Charging Requirements

One of the most significant challenges facing police departments transitioning to EVs is the need for frequent recharging and the associated infrastructure requirements. EVs need to be recharged at intervals that vary according to the size of the battery and the speed of the charger. While most agencies use 240 Volt Level 2 chargers, which can refill a large battery up to 80 percent in a few hours, direct current (DC) chargers are much faster but also more expensive. Building the charging infrastructure can be a significant cost consideration. Fast chargers can be very expensive, and the local power grid may not support them.

This infrastructure challenge is further compounded by the limited range of electric vehicles compared to their gasoline-powered counterparts. One of the major concerns with all-electric police vehicles is their limited driving range. Most EVs can travel around 250-300 miles on a full charge whereas some gasoline or long-range hybrid cars can go beyond 500 miles. For example, the Hyundai Elantra Hybrid Blue is often cited as a top choice for long-range with the potential to travel over 670 miles on a full tank.

While this limited range is concerning for routine patrols, it becomes particularly problematic in high-stakes situations that demand extended vehicle operation. The real challenge arises during criminal pursuits, where EVs require 30 minutes to charge using a fast charger at full voltage. In other cases, EV charging times can range from 30 minutes to two hours, which is significantly longer than the mere 3 minutes it takes to refuel a traditional gas-powered vehicle. This charging delay could severely impact the police's ability to maintain chase or respond quickly in an emergency. EVs need to be recharged more than traditional vehicles need to refuel, which can lead to increased downtime. This is particularly challenging in situations where police vehicles are used continuously across multiple shifts, a common practice in many departments.

At high speeds, EVs use more battery power, which can lead to quicker battery depletion and reduced range. While Tesla Model S Dual Motor All-Wheel Drive can accelerate from 0-60 mph in 3.1seconds, it might struggle during long high-speed chases. Additionally, consistent high-speed driving generates heat and negatively affects battery performance.

Power Grid Dependency and Extreme Weather Conditions

EVs rely on the power grid for charging, making them entirely vulnerable to power outages or failures. This also raises concerns about the ability of the grid to supply enough electricity to power EVs, especially during peak hours. According to the New York Times, California asked electric vehicle owners to limit charging during peak hours to reduce strain on the power grid.

Extreme weather conditions, such as the severe heat and wildfires that frequently occur in Southern California, pose significant challenges to the use of EVs in police patrols. High temperatures can strain EV batteries, reducing their efficiency and shortening vehicles' range. During wildfires or other natural disasters, the need for quick and reliable response times makes charging electric vehicles difficult, which could reduce their effectiveness in emergencies.

Risks of Hacking and Cyber Attacks on Electric Vehicles

EVs are vulnerable to a wide range of cyber threats, such as harmful software, privacy breaches, and third-party application vulnerabilities, which can compromise the safety and security of EVs.

The increasing dependence on mobile applications can present significant cyber security risks for police patrol cars. These systems can collect sensitive data, such as driver identification, location, and vehicle performance, making them prime targets for cyberattacks. Hackers could exploit software vulnerabilities to gain unauthorized access to these systems, potentially allowing them to take control of the vehicle or disrupt its operations. For example, in March 2024, security researchers used a $169 device to break into a Tesla Model 3 and drive it away. This demonstrated major security flaws in the vehicle.

In another case, cybersecurity researchers at the Pwn2Own computer hacking competition discovered serious security defects in Tesla vehicles. The researchers managed to exploit a weakness in the car's computer system, which allowed them to take control of the vehicle without permission.

Hackers could disable police EVs remotely, leaving officers stranded in critical situations. Charging stations connected to the internet are also at risk of attacks. Hackers could interfere with the charging process,

preventing the vehicle from charging or even causing overcharging, which could damage the vehicle. Additionally, data theft is one of the most significant concerns, as EVs store sensitive information such as personal data, location history, and driving habits. These risks could disrupt police operations and endanger public safety by making EV patrol cars less reliable and secure.

A Path Forward

While the move toward all-electric police vehicles is undoubtedly a step in the right direction for environmental sustainability, it is crucial to address the unintended challenges that come with this transition. The foremost priority is to ensure that the current infrastructure supporting these vehicles is secure and capable of handling surge loads. Police departments need to plan for these limitations, possibly by incorporating hybrid models, adopting a mixed approach of using both electric and gasoline vehicles initially, or implementing additional strategies to ensure vehicles remain operational during critical situations. By proactively addressing these challenges, we can pave the way for a more sustainable and efficient future for law enforcement.